

**How Much Do Students Learn in
College?:
Cross Sectional Estimates Using the
College BASE.**

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PRIOR EVIDENCE

- ◆ In the presence of statistical controls for important student background characteristics (e.g., academic ability, motivation, race, sex, high school performance) students with more exposure to postsecondary education make greater gains in measures of learning or cognitive development than students with less or no exposure.

PURPOSE

- ◆ To estimate the magnitude of the effects of year in school on cognitive development with statistical controls for important individual student precollege characteristics as well as the context of the institution in which the student attended
- ◆ To determine the presence of conditional effects of year in college on cognitive development and when they occur during the undergraduate experience

DATA

- ◆ Students from 56 four-year colleges and universities in 13 states
- ◆ The students, ages 19 to 22, at each institution came from all classes, freshman through senior, and agreed to participate in an assessment conducted by their institution
- ◆ Data collected from 1993 to 1998
- ◆ Sample sizes of 19,848 (for social studies test) to 18,418 (for CBASE composite)

DEPENDENT VARIABLES

- ◆ English score: Measures students' ability to read and write in college.
- ◆ Mathematics score: Measures students' knowledge of mathematics and math-related skills.
- ◆ Science score: Measures students' competencies associated with science-related knowledge and skills.
- ◆ Social studies score: Measures students' knowledge of history and social science.
- ◆ Composite score: Estimated by the addition of all four-subject test scores (English, mathematics, science, and social studies).

INDEPENDENT VARIABLES

- ◆ Year in School

STATISTICAL CONTROLS

1. Ethnicity
2. Sex
3. ACT score
4. Institutional average ACT score
5. Credit hours completed in college
6. Grade point average

ANALYSES

- ◆ The primary analyses regressed the five CBASE subject scores on the set of six control variables (i.e., individual ACT score; race; sex; cumulative grade point average; total postsecondary credits taken; average institutional ACT score), and year in college.
- ◆ The second stage of the analyses sought to determine the presence of conditional effects of year in college on CBASE scores.

RESULTS

- ◆ Seniors had between .5 and .6 of a standard deviation advantage over freshman across all CBASE subject scores.
- ◆ The vast majority of college impact on CBASE scores appears to take place during the first two years of college.
- ◆ Tests for the presence of conditional effects indicated only trivial (R^2 increases of less than 0.1%) and nonsignificant (even at $p < .05$) results for individual ACT score, race, and the estimated average ACT score of the students at the institution attended.
- ◆ There was evidence of modest, but significant ($p < .001$), conditional effects with respect to sex across all CBASE tests.

RESULTS

- ◆ **English** The senior (versus freshman) effect size for women was 77% of the corresponding senior effect size for men.
- ◆ **Mathematics** The senior (versus freshman) effect size for women was 42% of the corresponding senior effect size for men.
- ◆ **Science** The senior (versus freshman) effect size for women was 69% of the corresponding senior effect size for men.
- ◆ **Social Studies** The senior (versus freshman) effect size for women was 71% of the corresponding senior effect size for men.
- ◆ **Composite** The senior (versus freshman) effect size for women was 67% of the corresponding senior effect size for men.

CONCLUSIONS

1. The vast preponderance of college impact on CBASE subject areas occurred during the first two years of postsecondary education.
2. There are important differences in the magnitude of effects by sex.
3. The net effect of college on CBASE scores did not differ for students who attended institutions differing in the average academic ability of their student bodies.